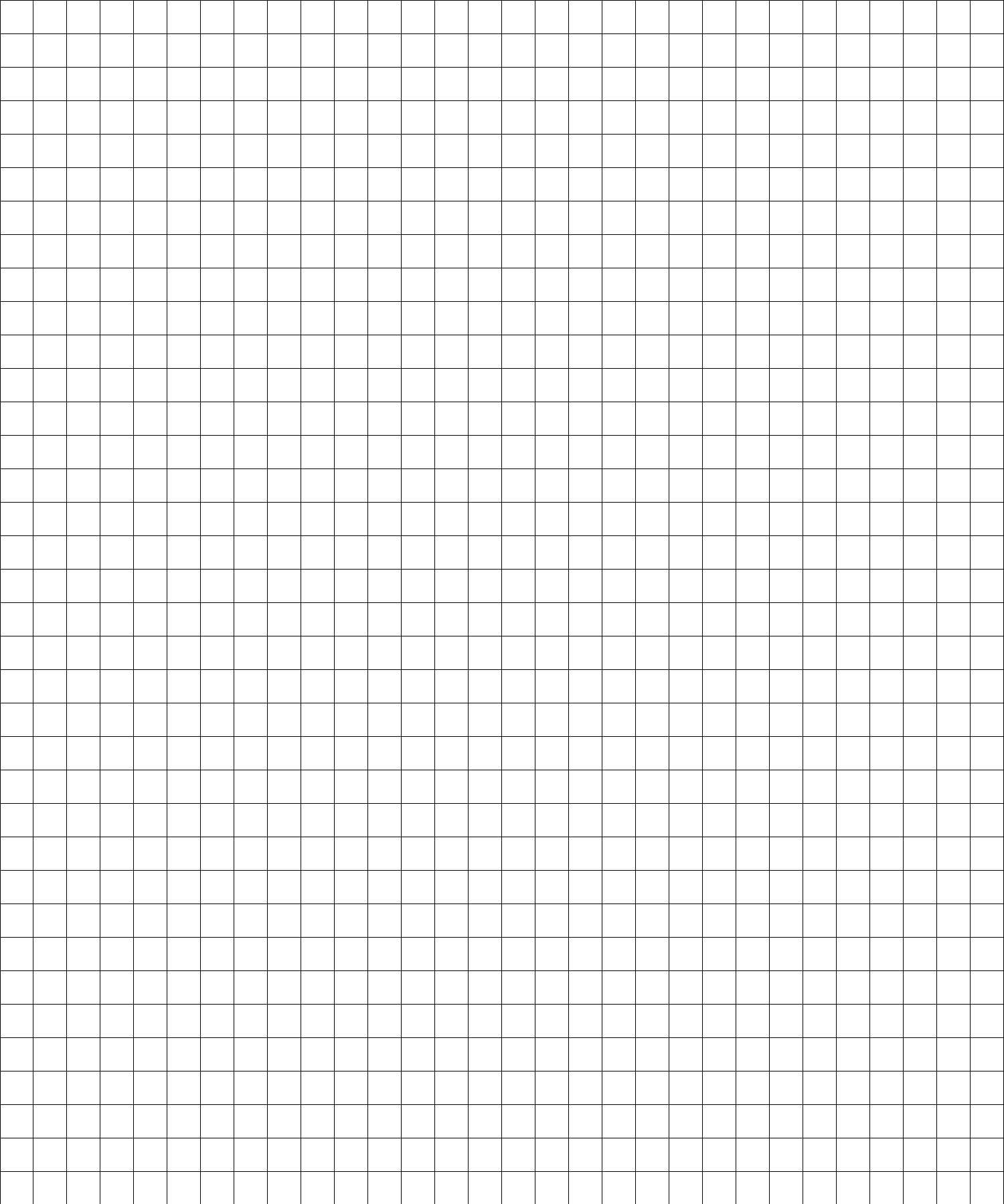
**Transformations in the Coordinate Plane** Name:

Rodriguez/Geometry & Honors Geometry

**Set 1**

A triangle has vertices at A(1, 3), B(4, 10), and C(6, 5).

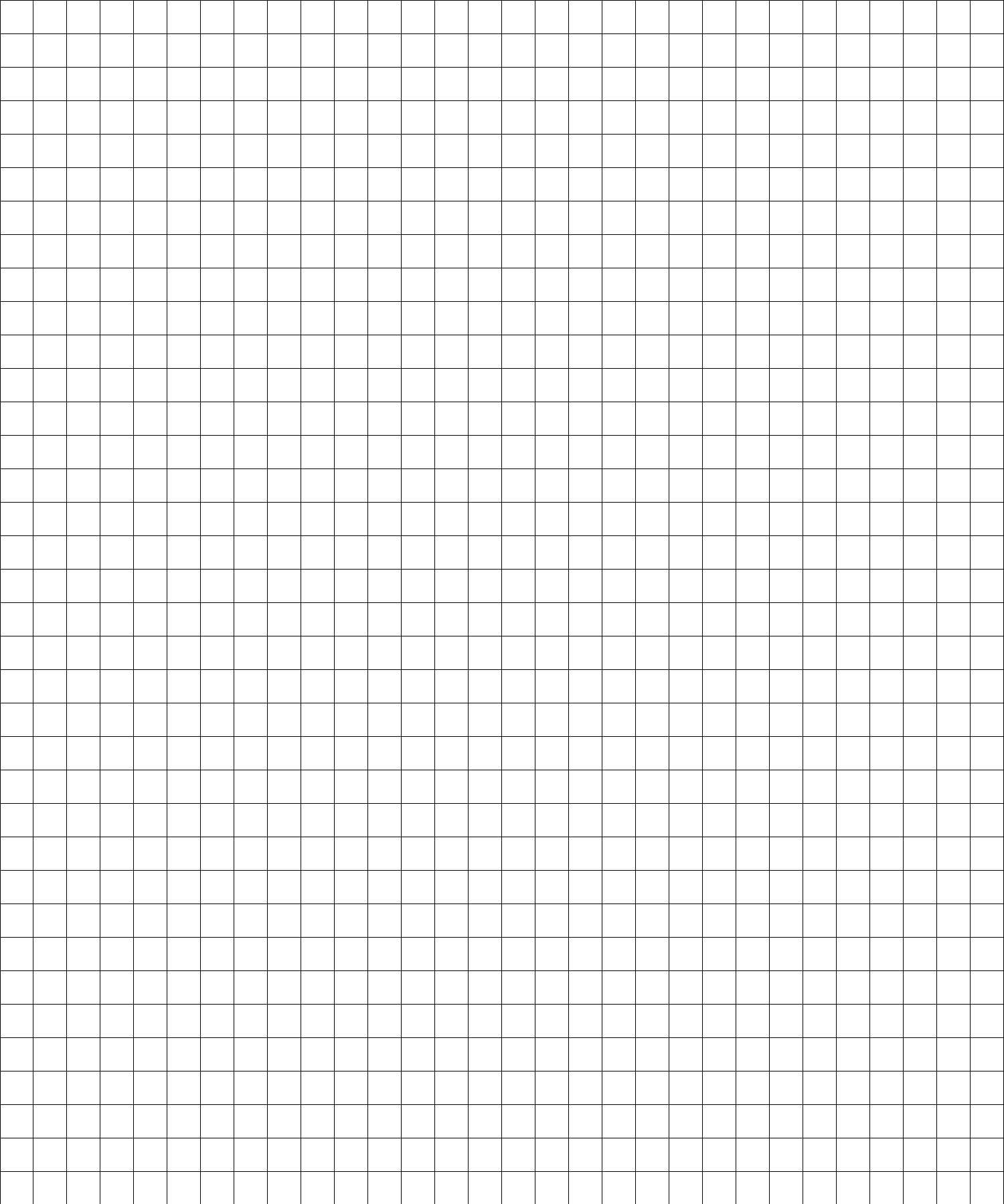
1. Triangle A’B’C’ is the result of a translation of (x + 4, y – 3). Draw triangle A’B’C’ and label its vertices. List the vertices below.
2. Triangle A”B”C” is a reflection of A’B’C’ across the y-axis. Draw triangle A”B”C” and label its vertices. List the vertices below.
3. Triangle A’’’B’’’C’’’ has vertices at A’’’(2, -5), B’’’(-1, -12), and C’’’(-3, -7). What transformations will take triangle ABC and place it on top of triangle A’’’B’’’C’’’? Show and explain.
4. Triangle DEF has vertices D(-1, -5), E(-4, -12), and F(-6, -7). Are triangle ABC and triangle DEF congruent? Show and explain how you know using transformations.



**Set 2**

A quadrilateral has vertices at A(-2, 0), B(0, 4), C(5, 1), and D(1, -2).

1. Quadrilateral A’B’C’D’ is the result of the translation (x – 6, y + 3). Draw quadrilateral A’B’C’D’ and label its vertices. List the vertices below.
2. Quadrilateral A”B”C”D” is a reflection of A’B’C’D’ across the line y = 2. Draw quadrilateral A”B”C”D” and label its vertices. List the vertices below.
3. If quadrilateral A”B”C”D” is rotated 90 degrees counterclockwise around the origin, what are the coordinates for the new quadrilateral A’’’B’’’C’’’D’’’? Label the new vertices and list the vertices below.
4. What transformations must you make to quadrilateral A’’’B’’’C’’’D’’’ to place it on top of quadrilateral ABCD? Show and explain how you know using transformations.



**Set 3**

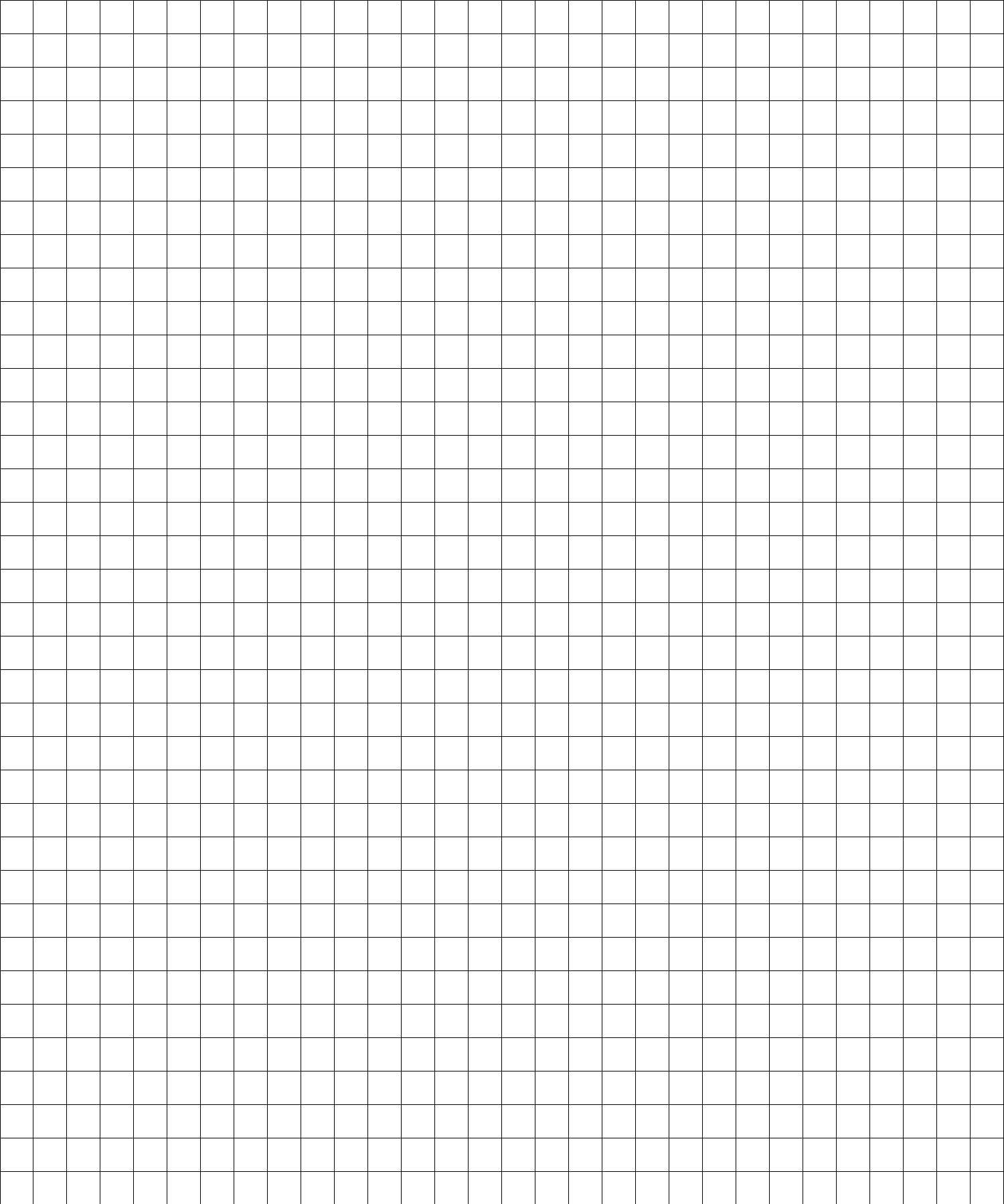
The square M(1,0), A(5,0), T(1,4), H(5,4) gets stretched vertically so that it still sits on the *x*-axis and becomes a rectangle twice as tall but with the same width.

a. Draw the resulting rectangle. Give the coordinates for the rectangle.

b. What formula describes what happens to any point (*x*, *y*) under this transformation?

c. Create a formula that would stretch the square horizontally to be twice as wide but keep the same height.

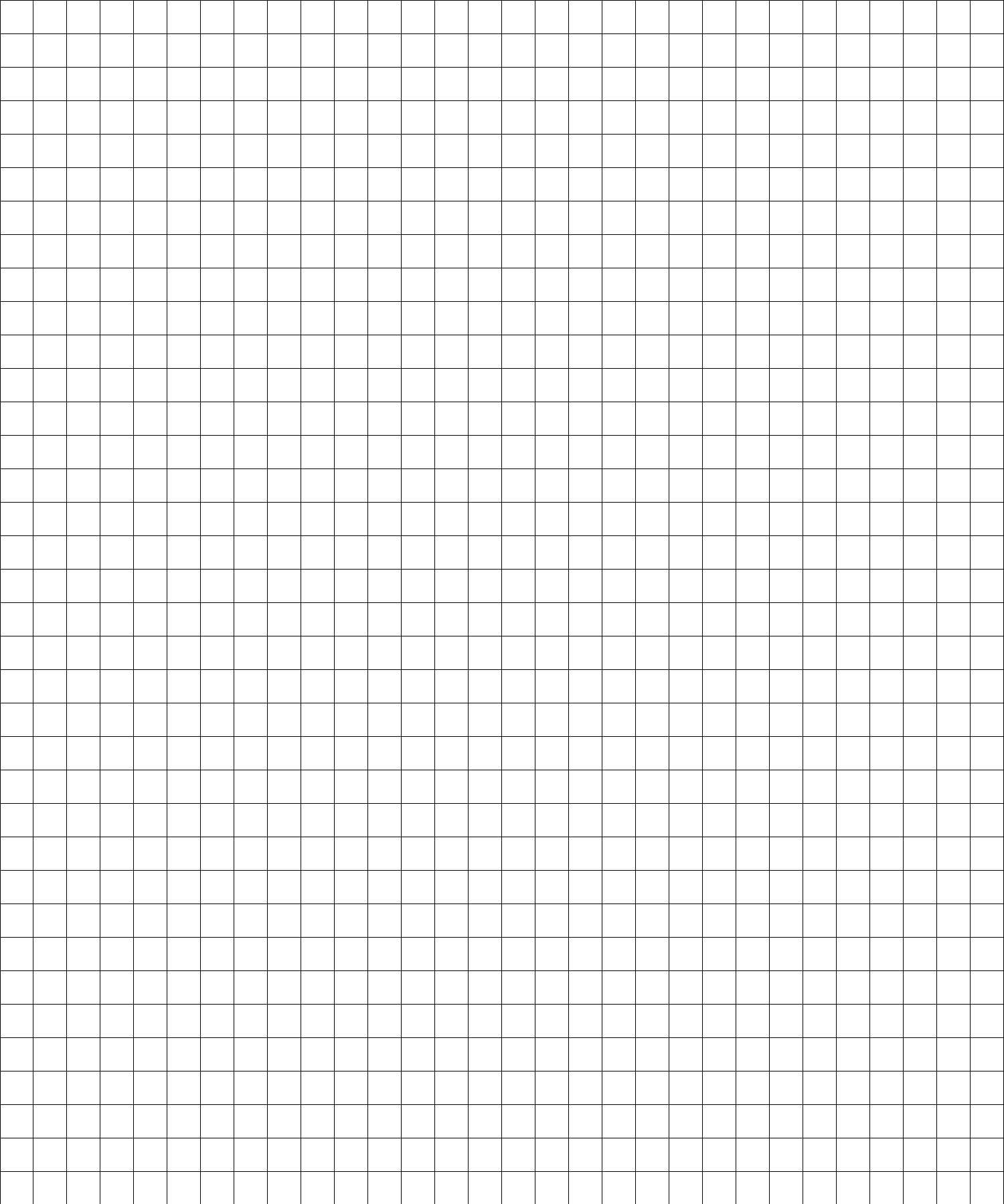
d. Rotate the original square 270 degrees counterclockwise. Give the coordinates for the new square.



**Set 4**

A triangle has vertices at A(7, 3), B(5, 4), and C(3, 1). In each case, draw the resulting image and give the new coordinates.

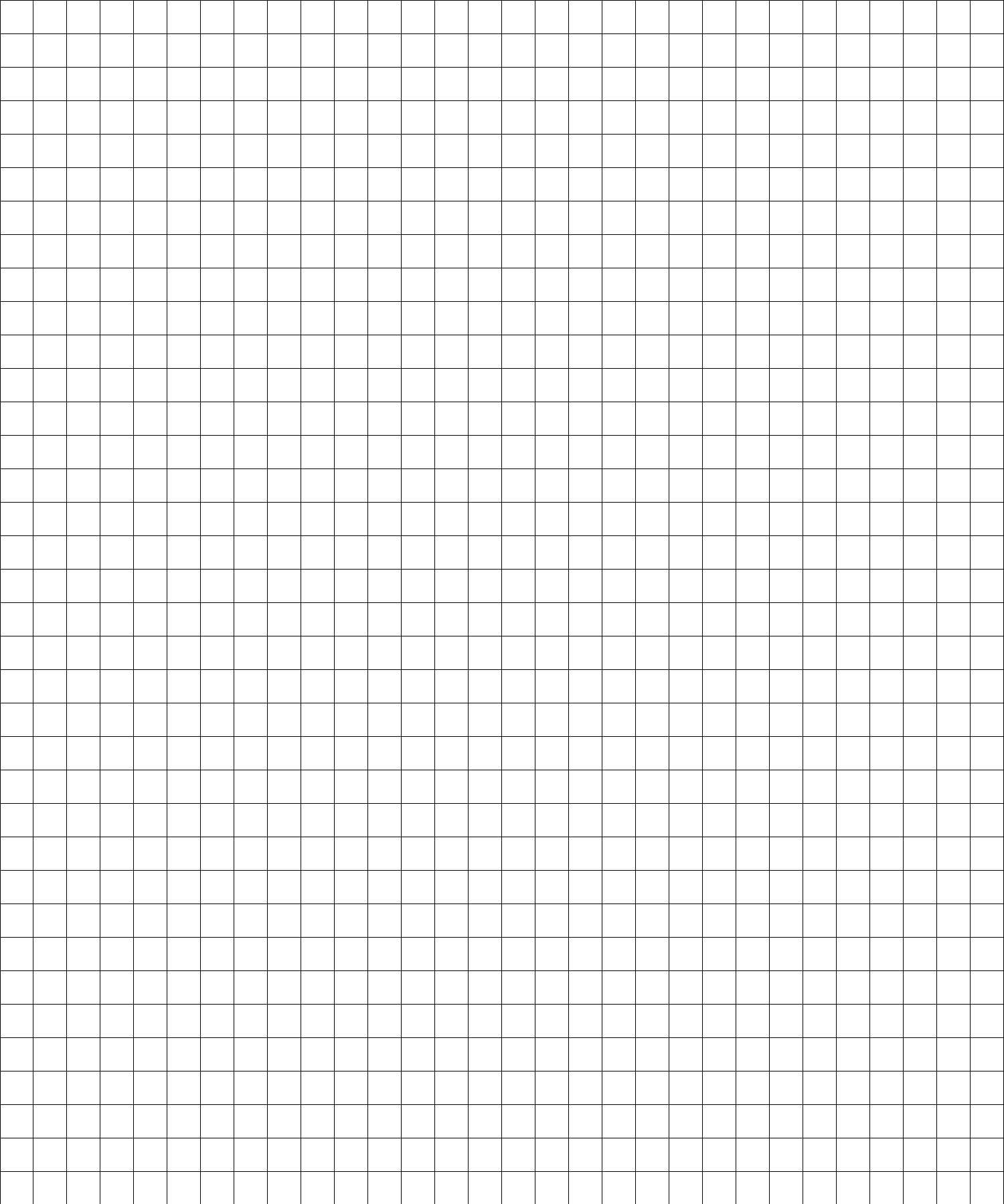
1. Triangle A’B’C’ is the result of rotating triangle ABC 180 degree clockwise around the origin. Draw triangle A’B’C’ and label its vertices. List the vertices below.
2. Triangle A”B”C” is a reflection of A’B’C’ across the line y = -4. Draw triangle A”B”C” and label its vertices. List the vertices below.
3. Triangle A”B”C” is then rotated 180 degrees counterclockwise around the point (0, 0) to form triangle A’’’B’’’C’’’. Label the new vertices and list the vertices below.



**Set 5**

A triangle has vertices at A(1, -2), B(3, 3), and C(-2, -1).

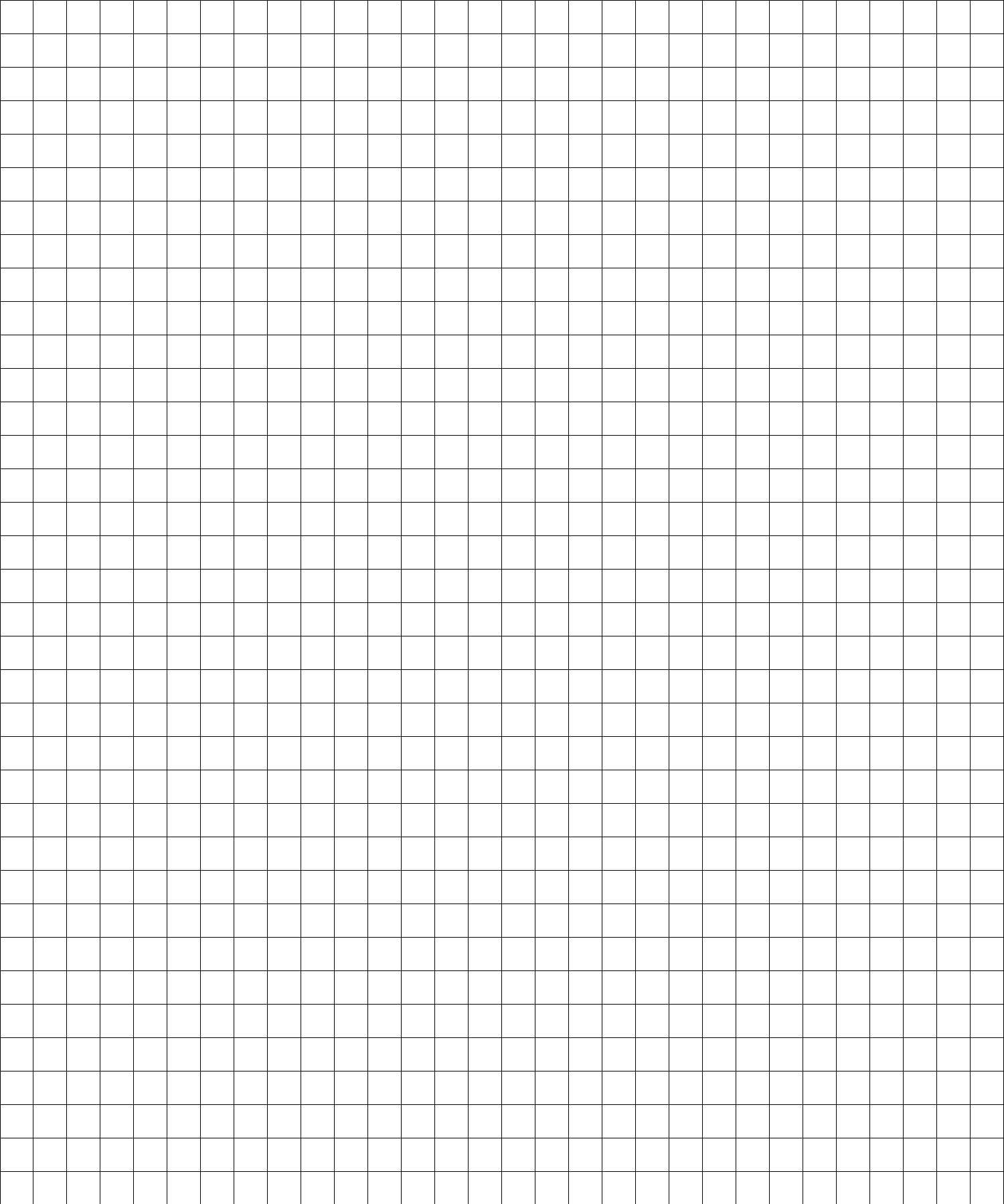
1. Triangle A’B’C’ is the result of the transformation (2x, 2y). Draw triangle A’B’C’ and label its vertices. List the vertices below.
2. Triangle A”B”C” undergoes the translations (x + 5, y – 6). Draw triangle A”B”C” and label its vertices. List the vertices below.
3. Triangle A’’’B’’’C’’’ is the result of reflecting A”B”C” over the line x = 4. Graph the new vertices and list them below.



**Set 6**

A quadrilateral has vertices at A(7, 0), B(0, 4), C(-3, 1), and D(1, -2).

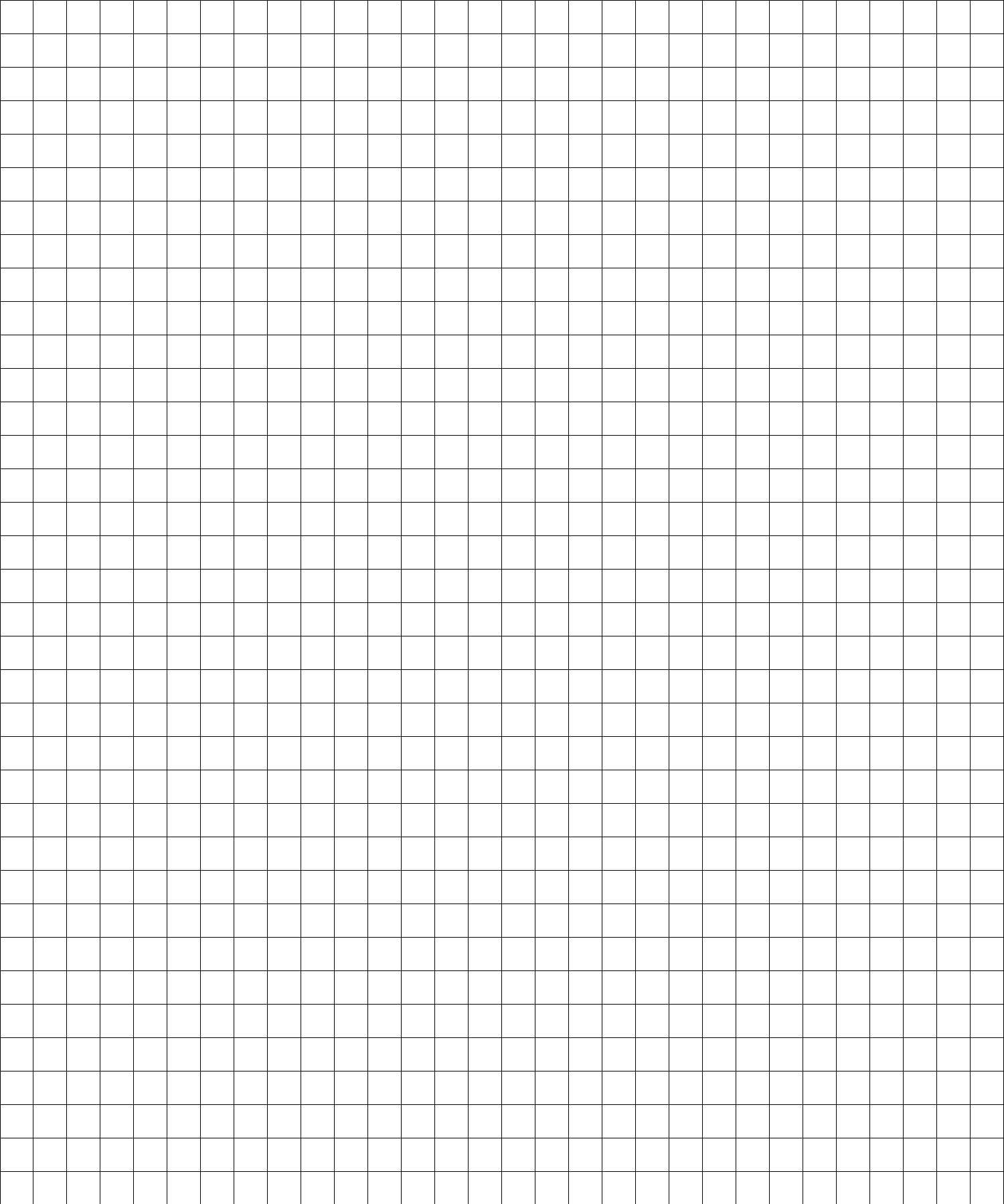
1. Quadrilateral A’B’C’D’ is the result of the translation (x – 2, y + 3). Draw quadrilateral A’B’C’D’ and label its vertices. List the vertices below.
2. Quadrilateral A”B”C”D” is a reflection of A’B’C’D’ across the line y = x. Draw quadrilateral A”B”C”D” and label its vertices. List the vertices below.
3. If quadrilateral A”B”C”D” is rotated 180 degrees counterclockwise. What are the coordinates for the new quadrilateral A’’’B’’’C’’’D’’’? Label the new vertices and list the vertices below.
4. What transformations must you make to quadrilateral A’’’B’’’C’’’D’’’ to place it on top of quadrilateral ABCD? Show and explain how you know using transformations.



**Set 7**

A triangle has vertices at A(-6, 7), B(0, 3), and C(-2, -1).

1. Triangle A’B’C’ is the result of translation of 2 units down and 4 units right. Draw triangle A’B’C’ and label its vertices. List the vertices below.
2. Triangle A”B”C” is a reflection of A’B’C’ across the line y = -x. Draw triangle A”B”C” and label its vertices. List the vertices below.
3. Triangle A’’’B’’’C’’’ is the result of a 270 degree rotation around point B”. Graph the new vertices and list them below.
4. List the transformations needed to take triangle A’’’B’’’C’’’ and place it on top of triangle ABC. Show and explain how you got your answer.



**Set 8**

For each part, give step-by-step instructions (using mathematical vocabulary) of how to transform the solid shape onto the dashed shape. Illustrate each step of the instructions on your graph and label the new coordinate points.

